

NASA GODDARD SPACE FLIGHT CENTER (GSFC)

ENVIROMENTAL SUCCESS STORIES



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NASA's GSFC Waste Minimization Goals

- Sustainable use of natural resources;
- Reduction of wastes through source reduction and recycling;
- Identifying and mitigating the waste impacts of program and project activities.

Establishment of Cross-Center Teams

NASA GSFC established two cross-center teams in 2006 dedicated to hazardous and non-hazardous waste and recycling.

- **GREEN TEAM**

Reduce non-hazardous waste and promote recycling outreach programs

- **HAZARDOUS WASTE MINIMIZATION TEAM**

Reducing the use, storage, and transportation of hazardous waste on center and tracking

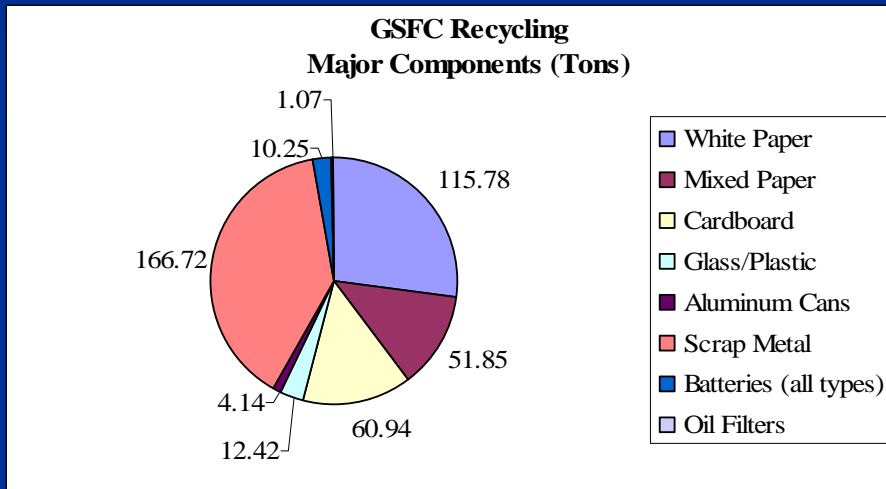
General Mission Statement

- To develop a method to encourage and educate Center employees and management on the importance of waste prevention/reduction and recycling at the Center. To sponsor the initiation of new programs, and projects.

Outline of Teams

- **Meeting Schedule:** Team (core) committee meetings will be held once a month. Subcommittees may be formed that will set their own meetings.
- **Quorum Rules:** Minimum of 50% attendance of the core green team to hold a meeting.
- **Membership Guidelines:** Membership will be on a voluntary basis. However, participation from each directorate on the Center for the core will be targeted. Advertising will be through Goddard Opportunity Bulletin Board System (GOBBS) and various Center communication tools.
- **Membership Terms:** A core team member should be able to participate on a yearly basis. A core team member can recommit after the year.
- **Chair Selection:** The Chair will be the team leader responsible as determined by the EMS planning process for team initiation.

Goddard Recycling



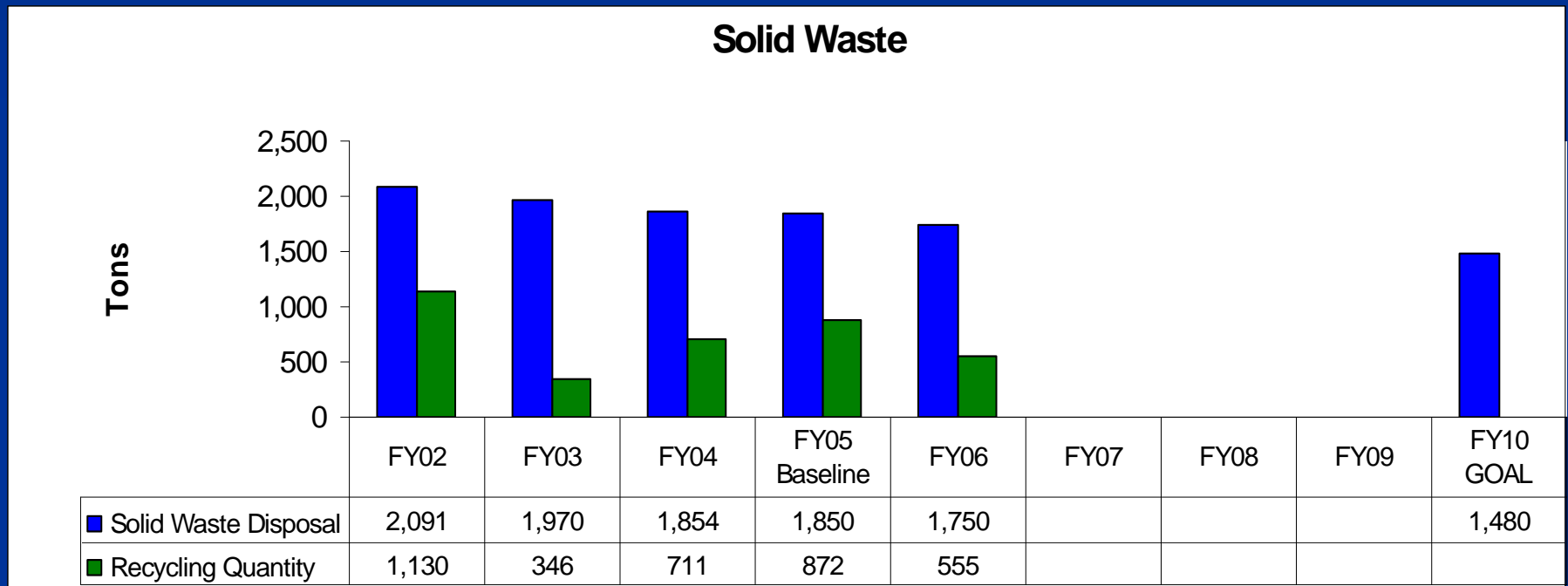
FY: 2006

Approximately 24% of Solid Waste was recycled. NASA agency goal is 35% by 2005. In FY 2006 GSFC purchased about \$1.2 million worth of products containing recycled content.

Component	Tons
White Paper	115.78
Mixed Paper	51.85
Cardboard	60.94
Glass/Plastic	12.42
Aluminum Cans	4.14
Scrap Metal	166.72
Batteries (all types)	10.25
Oil Filters	1.07

Yard waste (composted)	320 yd3
Toner Cartridges	1500 units
Fluorescent Light Tubes	12,328 units
Tires	28 units
Oil	2010 gals
Antifreeze	190 gals

EMS Goals: Reduce the waste going to Landfill by 20% from the FY 2005 Baseline by 9/30/2010



Team Activities

- Coordinate educational events on Center towards promoting recycling efforts (America Recycles Day, Celebrate Goddard Day).
- Portable Poster Sessions allow team members to promote green team activities and gain important feedback from Goddard employees related to recycling on center.
- Disseminate news and stories about recycling and waste reduction (Goddard News, Dateline).

AMERICA RECYCLES DAY!



15th of November, GSFC
Environmental Activities, The
3Rs

Reuse, Reduce, and Recycle!



POSTER SESSIONS



- Obtaining valuable information on recycling and getting feedback from NASA Goddard employees.



ST. PATRICK'S DAY

Birds of a Feather



15th of March, Green Team
Poster Session



CELEBRATE GODDARD DAY!



Green Team Booth

June 28, 2006

Cost-Saving Techniques

- One of the Center's goals is finding out ways of saving money on environmental issues.
- Cost-saving techniques when conducting environmental remediation is a key component to effective policy goals (Ex. Mercury Spill).

Mercury Spill

- The **Space Environment Simulator (SES)** is a three-story high thermal-vacuum chamber located in Building 10 that features an 8.2 meter diameter by 12.2 meter high vacuum chamber capable of simulating temperature and vacuum conditions for virtually any launch or orbital environment condition. Shroud temperatures within the chamber can be controlled to $-180\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$

Mercury Spill

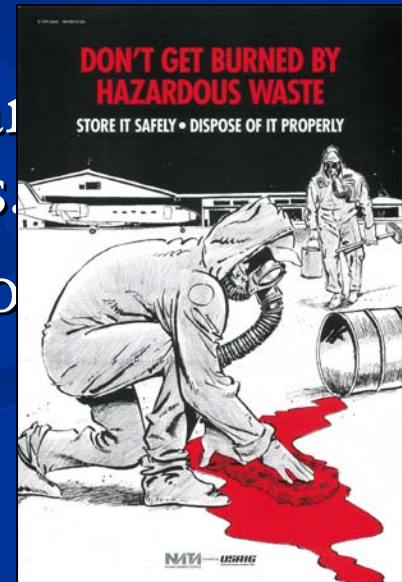
The image shows the interior of a chamber with a corrugated metal wall. The wall is covered with numerous red spots, likely indicating the presence of mercury. A small, rectangular label is affixed to the wall on the left. To the right, a louvered door is partially open, revealing a dark interior. The floor is made of metal and shows some signs of wear and discoloration.

Workers found mercury under and in fiber glass insulation and around chamber air ducts. Also found localized within the chamber and basement floor.



24 hours Maryland Department of the Environment Spill report

- On July 6, 2006 while conducting asbestos remediation in Building 10, workers found mercury suspected of coming from many broken manometers and ARC lamps used to heat the SES chamber.
- Air vapor testing in asbestos confinement area confirmed no detectable Hg concentrations.
- NASA Goddard Environmental Contractors closed off the area and collected about 150 bags of contaminated material.



Economical Benefits

- In dealing with the site, GSFC hired a contractor to cleanup the mercury using a mercury vacuum and compact the bags into 20 drums.
- The disposal price for each drum was \$1,250. Compacting reduced the total numbers of drums from 60 drums to 20 drums, saving the government approximately \$48,000 (Contractor costs, compact equipment).
- As a result of the incident, the Goddard Hazardous Waste Minimization Team developed the goal to eliminate all unnecessary uses of mercury and reduce exposure to potential releases.

Results

- The Team developed a survey on the application and use of mercury on Center.
- After an exhaustive inventory, the Team found a greater than expected amount of mercury containing equipment.
- New ways are being developed for better communication of hazardous waste and remediation efforts (Mercury Awareness training).

GODDARD WASTE REDUCTION PRIORITIES

- Goddard has made waste minimization a major component of its overall Environmental Management System.
- These cross-center teams will help manage its potential impacts on the natural environment at Goddard and improve environmental behavior in the workplace.
- Moreover, it can refocus the organization's attention beyond mere compliance and build toward eco-friendly environmental and economic performance.
- As these teams evolve, members will discover new opportunities to prevent, rather than simply manage pollution, and to reduce wasteful uses of resources, in effect saving money while improving the environment.